


A avaliação expedita do solo

ECAF

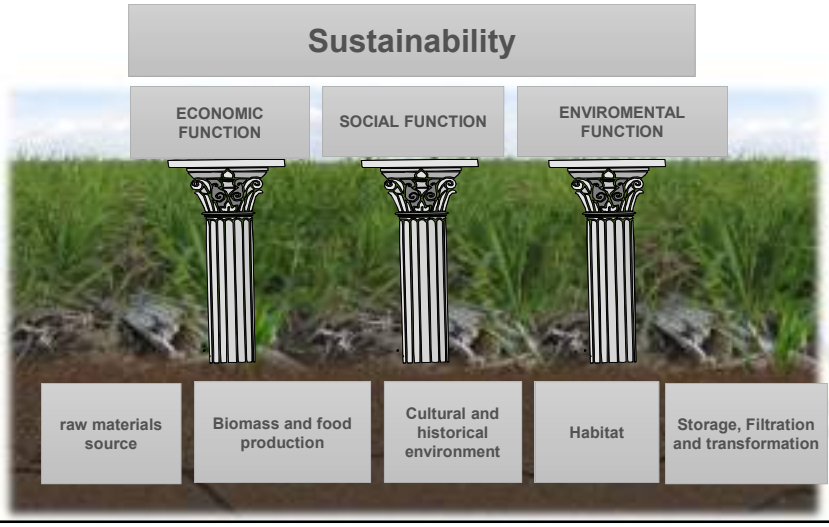
agromitiga

Julio Román-Vázquez

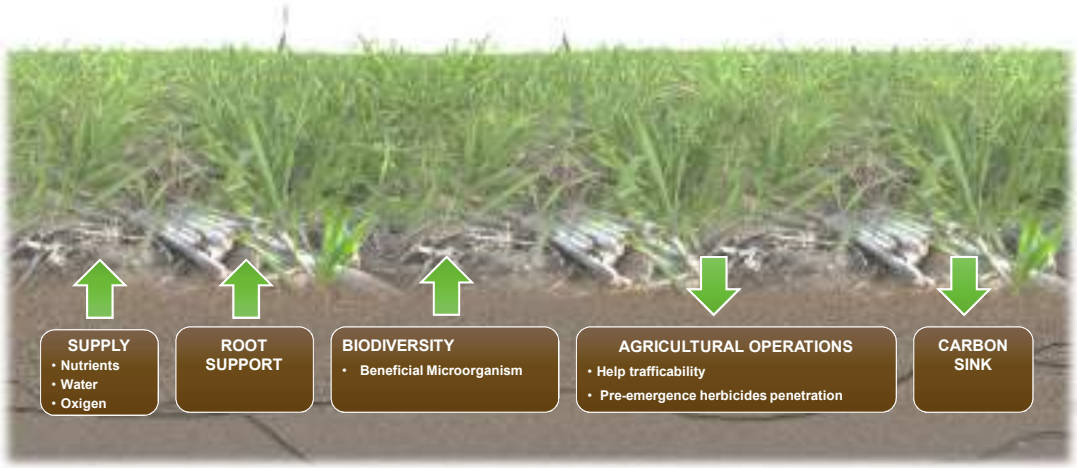
Soil Functions

ECAF

agromitiga



The role of soil in Agriculture



Soil Threats

- Runoff and soil erosion
- Decline of Soil Organic Content
- Loss of soil biodiversity
- Soil Compaction
- Salinization
- Desertification

Intensive tillage

Soil Properties

Physical Properties

- Texture
- Structure
- Density
- Porosity
- Colour
- Temperature
- Hydraulic conductivity

Chemical Properties

- Organic Matter
- Clay Content
- pH
- Electric Conductivity
- Cation exchange capacity
- Redox

Biological Properties

- Number and type of soil organisms, including earthworms, nematodes, protozoa, fungi, bacteria and different arthropods

HYDROLOGICAL PROPERTIES

Visual Soil Assessment

- The maintenance of good soil quality is vital for the environmental and economic sustainability
- Usually, not enough attention is given to:
  - The basic role of soil quality in efficient and sustained production.
  - The effect of the condition of the soil on the gross profit margin.
  - The long-term planning needed to sustain good soil quality.
  - The effect of land management decisions on soil quality.

Soil Type and the effect of management determine the productive performance of maize cropping and have profound effects on long-term profit

Visual Soil Assessment

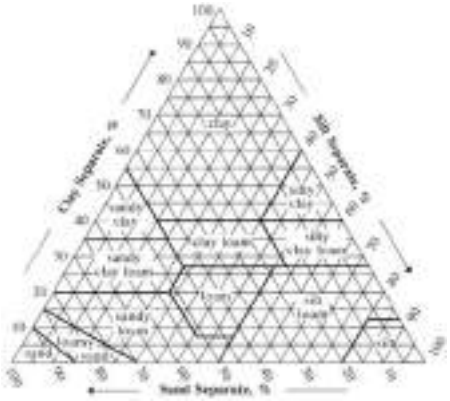
https://www.fao.org/3/i0007e/i0007e.pdf

Visual indicators of soil quality	Visual score (VS) 1 = Poor condition 2 = Moderate condition 3 = Good condition	Weighting	VS ranking
Soil texture		x 3	
Soil structure		x 3	
Soil porosity		x 3	
Number and colour of soil mottles		x 2	
Soil colour		x 2	
Earthworms (Number = / No. size =)		x 3	
Soil smell		x 2	
Potential rooting depth ( )		x 2	
Surface ponding		x 3	
Surface cover and surface crusting		x 2	
Soil erosion (wind/water)		x 1	
SOIL QUALITY INDEX (sum of VS rankings)			

Soil Quality Assessment	Soil Quality Index
Poor	< 20
Moderate	20–27
Good	> 27

Soil Texture

Indicates the relative content of particles of various sizes, such as sand, silt and clay in the soil



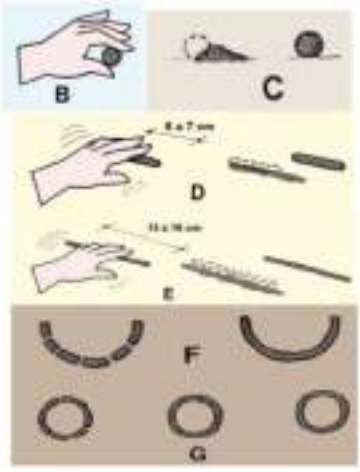
Texture		Density	Water holding capacity (mm of water per soil cm)
S	Sand	1,35	0,70
SL	Sandy loam	1,40	1,00
SC	Sandy clay	1,50	1,35
LIS	Light loamy sand	1,50	1,20
LS	loamy sand	1,45	1,45
LmS	Middle Loamy sand	1,45	1,60
LSC	Loam sandy clay	1,50	1,65
LCS	Loamy clay sand	1,45	1,75
LI	light loam	1,45	1,30
Lm	Middle Loam	1,35	1,75
LC	Loamy clay	1,40	1,95
CS	Clay sand	1,55	1,70
C	Clay sand	1,45	1,75
CL	clay loam	1,40	1,80

Source: Service de Cartographie des Sols de l'Aisne

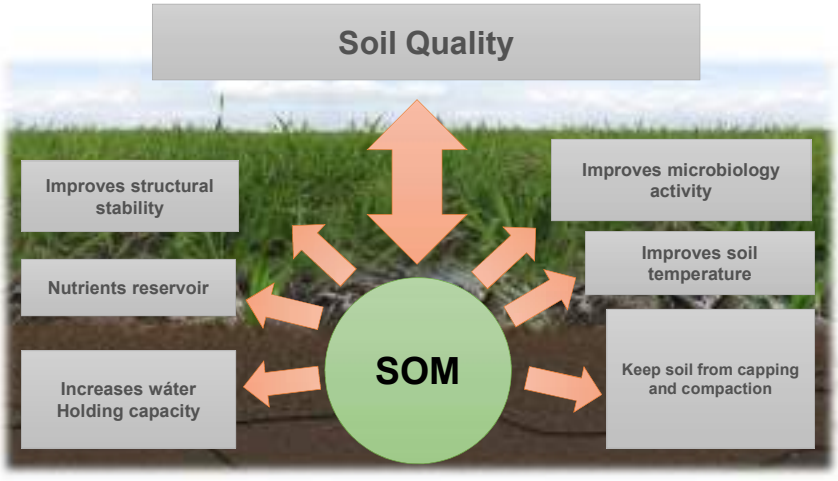
How determine soil texture

Take a handful of soil and wet it so that it begins to stick together, but without sticking to your hand
Roll the soil sample into a ball about 3 cm in diameter;
Put the ball down...

- If it falls apart, it is **sand**;
- If it sticks together, go on to the next step.
- Roll the ball into a sausage shape, 6-7 cm long ...
- If it does not remain in this form, it is **loamy sand**;
- If it remains in this shape, go on to the next step.
- Continue to roll the sausage until it reaches 15-16 cm long
- If it does not remain in this shape, it is **sandy loam**;
- If it remains in this shape, go on to the next step.
- Try to bend the sausage into a half circle ...
- If you cannot, it is **loam**;
- If you can, go on to the next step.
- Continue to bend the sausage to form a full circle ...
- If you cannot, it is **heavy loam**;
- If you can, with slight cracks in the sausage, it is **light clay**;
- If you can, with no cracks in the sausage, it is **clay**.



How determine soil organic matter content



How determine soil organic matter content

Runoff and Erosion

Source: Join Research Center

Runoff and Erosion

Runoff and Erosion

ECAF
European Conservation Agriculture Federation

www.ecaf.org

agromitiga

www. lifeagromitiga.eu